IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Peter W. Wenzel et al. **Examiner**: Daniel Jr., Willie J.

Serial No: 09/981,268 **Art Group**: 2617

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Title: HOME AGENT REDUNDANCY IN A CELLULAR SYSTEM

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APPEAL BRIEF PURSUANT TO 37 C.F.R. § 41.37

Subsequent to the Final Office Action, a Notice of Appeal with a Pre-Appeal Brief was filed on September 5, 2006, and received September 11, 2006. A Notice of Panel Decision from Pre-Appeal Brief Review was mailed November 2, 2006, with an indication to proceed to the Board of Patent Appeals and Interferences, creating an Appeal Brief Due date of December 2, 2006. MPEP § 1206 at page 1200-7. Accompanying this Brief in Support of an Appeal are the necessary fees. If any petition fee for an extension of time or any other additional fee is required, the undersigned attorney directs the office to debit such fee from deposit account number 50-2126.

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A. Real Party in Interest

All rights to the above referenced patent application have been assigned to:

Nortel Networks Limited
2351 Boulevard Alfred-Nobel
St. Laurent, Quebec, Canada H4S 2A9

B. Related Appeals and Interferences

There are no known other appeals or interferences that would directly or indirectly affect the Board's decision in the present appeal.

C. Status of the Claims

Claims 1-23 are pending. Claims 1-23 stand rejected under 35 U.S.C. 103(a) generally under the proffered combination of Ton in view of Perkins (*see* Final Office Action mailed June 5, 2006 [*hereinafter* Final Office Action]) in combination with other references.

D. Status of Amendments

Subsequent to the Final Office Action, a Notice of Appeal with a Pre-Appeal Brief was filed on September 5, 2006, and received September 11, 2006. A Notice of Panel Decision from Pre-Appeal Brief Review was mailed November 2, 2006, with an indication to proceed to the Board of Patent Appeals and Interferences, creating an Appeal Brief Due date of December 2, 2006. MPEP § 1206 at page 1200-7. No amendments were filed subsequent to the final rejection.

E. Summary of claimed subject matter

The claims of the present application are directed towards subscriber unit registration in a cellular system when an assigned home agent is not operational, resulting in a failure of registration of the subscriber unit with the cellular system. Registration failure precludes the subscriber unit from receiving Internet Protocol communication service from its cellular system provider. (Specification at p. 2).

To overcome these failures, a subscriber unit is programmed with a plurality of IP addresses, each corresponding to a home agent of the service provider. The programmed IP addresses include the IP addresses of a primary home agent and a secondary home agent. Upon an initial registration attempt, the subscriber unit attempts to register with its primary home agent. Should this operation fail, the subscriber unit attempts registration with its assigned secondary home agents. (Specification at p. 3).

In a further aspect, the subscriber unit rank orders a plurality of secondary home agents fro which it has been programmed. Such ranking may be based upon the generation of a random number and with the random number used to rank the plurality of secondary home agents. In another aspect, a date or time of day is employed in rank ordering the plurality of secondary home agents. Such rankings serve to distribute the load among the plurality of home agents when registration failure is a result of disparate loading among agents. (Specification at p. 4).

Claims 1-23, of which Claims 1, 10, and 15 are independent claims, are directed towards subscriber units and methods, respectively, for registering the subscriber unit with a cellular system.

In particular, Independent Claim 1 describes a method (*see* Figure 2) for registering a subscriber unit (110 through 118 of Figure 1; 602 of Figure 6) with a home agent (138, 140 of Figure 1) in a cellular system (*see* Figure 1). The method comprises storing addresses for a plurality of home agents in the subscriber unit (608, 616 of Figure 6), wherein the plurality of home agents includes a primary home agent and a plurality of secondary home agents. The subscriber unit attempts registration with the primary home agent (step 204 of Figure 2), and the subscriber unit fails to achieve registration with the primary home agent (step 206 of Figure 2). The subscriber unit selects a secondary home agent from the plurality of secondary home agents (step 210 of Figure 2; Figure 3B) in an attempt to balance load among the plurality of secondary home agents (*see* Specification at p. 4). The subscriber unit attempts registration with the secondary home agent (step 212 of Figure 2).

Independent Claim 10 describes, *inter alia*, a method (*see* Figure 2) for registering a subscriber unit (110 through 118 of Figure 1; 602 of Figure 6) with a home agent (138, 140 of Figure 1) in a cellular system (*see* Figure 1). The method comprises storing addresses for a plurality of home agents in the subscriber unit (608, 616 of Figure 6), wherein the plurality of home agents includes a primary home agent and a plurality of secondary home agents. The subscriber unit attempts registration with the primary home agent (step 204 of Figure 2), and fails to achieve registration with the primary home agent (step 206 of Figure 2). The subscriber unit rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent in an attempt to balance load among the plurality of secondary home agents (step 210 of Figure 2; Figure 3A). The subscriber unit attempts registration with the first secondary home agent (*see* steps 212, 216, 218 of Figure 2).

Independent Claim 15 describes, subscriber unit (602 of Figure 6) that operates within a cellular system. The subscriber unit comprises an antenna (605 of Figure 6), a radio frequency unit (604 of Figure 6) coupled to the antenna; and at least one digital processor (606 of Figure 6) coupled to the radio frequency unit that executes software instructions. The execution of the software instructions by the at least one digital processor causes the subscriber unit to store addresses for a plurality of home agents in the subscriber unit (608, 616 of Figure 6), wherein the plurality of home agents includes a primary home agent and a plurality of secondary home agents. Via the software instructions, the subscriber unit attempts registration with the primary home agent (step 204 of Figure 2). Failing to achieve registration with the primary home agent (step 206 of Figure 2), the software instructions cause the subscriber unit to select a secondary home agent from the plurality of secondary home agents in an attempt to balance load among the plurality of secondary home agents (step 210 of Figure 2; Figure 3A), and attempt registration with the secondary home agent (step 212 of Figure 2).

F. Grounds of rejection to be reviewed on Appeal

The rejection of Claims 1, 7-9, 15, and 21-23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application 2002/0067704 to Ton ("Ton") in view of Perkins, "*IP Mobility Support*" (Perkins I).

The rejection of Claims 2, 3, 10, 11, 16 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Ton in view of Perkins, "*IP Mobility Support* (Perkins I)," and further in view of U.S. Publication No. 2002/0078238 ("Troxel").

The rejection of Claims 4 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Ton in view of Perkins, "*IP Mobility Support*, (Perkins I)" and further in view of Troxel, further in view of Jue et al., "*Design & Analysis of Replicated Server Architecture for Supporting IP-Host Mobility*" ("Jue"), even further in view of U.S. Patent No. 6,615,050 to Tiedmann et al. ("Tiedmann").

The rejection of Claims 5, 6, 13, and 14 under 35 U.S.C. § 103(a) as being unpatentable over Ton in view of Perkins, "*IP Mobility Support*," and further in view of Troxel, further in view of Perkins "*Mobile Networking through Mobile IP* (Perkins II)", and even further in view of U.S. Patent No. 5,590,092 to Fehnel ("Fehnel").

The rejection of Claims 19-20 under 35 U.S.C. § 103(a) as being unpatentable over Ton in view of Perkins, "*IP Mobility Support* (Perkins I)" further in view of Troxel, and further in view of Perkins, "*Mobile Networking through Mobile IP* (Perkins II)."

The rejection of Claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Ton in view of Perkins, "*IP Mobility Support* (Perkins I)," further in view of Troxel, and further in view of Jue.

G. Argument:

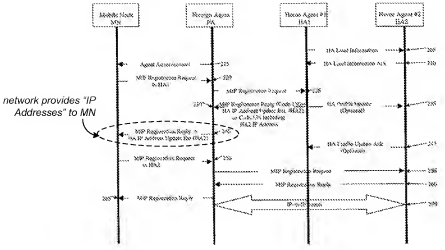
To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). MPEP § 2142, p. 2100-134 (Rev. 3, May 2005).

1. *Prima Facie* case of obviousness was not established to Independent Claims 1 and 15 because the cited base references of *Ton* and/or *Perkins I* do not teach or suggest all of Applicant's claim limitations

a. Registration is a prerequisite for receiving secondary home agents - the network of Ton only provides secondary home agents following registration

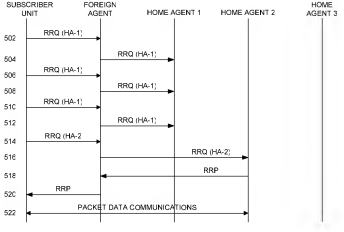
To avoid Home Agent failure following mobile node registration, Ton calls for "*an additional Mobile IP extension [that] is added to the registration reply message* [that allows] the Mobile Node . . . to select a new secondary Home Agent to perform registration with in case the primary Home Agent fails." (Ton ¶ 0028).

In other words, Ton allows redundancy activity only once the subscriber unit is *registered with the network*, such as through a foreign agent. Ton does not provide for redundancy upon an initial inability for a mobile terminal to register with the network. Further, as shown in Figures 2-4 of Ton, secondary addresses are supplied by the network, and *not by the mobile terminal*. Referring by example to Figure 2 of Ton:



Under Ton, without the provisioning of an "IP Address Update" by the network, the mobile node would not have the capability, as understood, of accessing the secondary HA addresses.

In contrast, Applicant's Figure 5 reflects the capability to register within that the network provides "IP addresses" to the mobile node:



That is, as explained in Applicant's specification with respect to Figure 5, "a subscriber unit initiates registration with its assigned primary HA and, upon failure in this registration operation, the subscriber unit initiates registration with a secondary HA." (Specification at p. 14, *ll*. 2-6).

b. Perkins I does not mobile terminal access redundancy, but instead relates to home agent reliability

Section 3.6 of Perkins, "*IP Mobility Support* (Perkins I)," recites that "a mobile node MAY be configured with the IP address of one or more of its home agents; otherwise, the mobile node MAY discover a home agent using the procedures described in Section 3.6.1.2." (Perkins, "*IP Mobility Support*, p. 33, § 3.6).

Applicant respectfully submits, however, that these home agents, as understood, are primary home agents in that "[a] home agent MUST always be prepared to serve the mobile nodes for which it is the home agent." (*Id.* at p. 16) (original emphasis). In other words, the Home Agent of Perkins *would not be in an inoperable state to affect mobile node registration*. Accordingly, Perkins does not address instances where the home agent is inoperable and subsequent actions are taken by a mobile node to gain connectivity.

c. *In contrast to the hypothetical combination of* Ton *with* Perkins I, *Applicant's Method of Claim 1 and Apparatus of Claim 15 recite,* inter alia*, storage of addresses for a plurality of home agents in the subscriber unit prior to registration attempts with a cellular network.*

Accordingly, there is no suggestion or motivation provided by the post-registration redundancy of Ton with the home agent reliability of Perkins I to achieve Applicant's claimed invention of "*storing addresses for a plurality of home agents in the subscriber unit,*" "*failing to achieve registration*," and subsequently "*attempting registration with a secondary home agent*" as set out in Independent Claims 1 and 15. Further, the hypothetical combination of Ton in view of Perkins I do not teach or suggest all the claim limitations of applicant's claimed invention.

2. Adding *Troxel* with *Ton* & *Perkins I* does not cure deficiencies in the lack of *prima facie* obviousness against Claim 10

Troxel relates generally to "invention [that] can enable nodes on a foreign subnetwork to exchange messages." (Troxel ¶ 0016). Troxel was added to Ton and Perkins I because it allows

rankings of foreign agents "based, for example, on services offered by the agents, capacity, signal strength, and so forth." (Troxel ¶ 51). Troxel does not address initial registration failure by a mobile terminal.

But Applicant's Independent Claim 10 recites a "method for registering a subscriber unit with a home agent in a cellular system, the method comprising: *storing addresses for a plurality of home agents in the subscriber unit*, wherein the plurality of home agents includes a primary home agent and a plurality of secondary home agents; *attempting registration with the primary home agent*; failing to achieve registration with the primary home agent; the *subscriber unit rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent in an attempt to balance load among the plurality of secondary home agents*; and attempting registration with the first secondary home agent." (emphasis added).

Applicant Accordingly, there is no suggestion or motivation to modify the post-registration redundancy device of Ton in view of the protocol enhancements of Perkins I, "IP Mobility Support," and further in view of the foreign agent ("FA") ranking device of Troxel, to achieve Applicant's invention recited in the method of Independent Claim 10, much less teach or suggest all the claim limitations. Applicant respectfully submits that a prima facie case of obviousness has not been established with respect to Claims 2 and 3, which depend directly or indirectly from Independent Claim 1, Claim 10 and 11 that depends therefrom, and Claims 16 and 17 depend directly or indirectly from Independent Claim 15, by the hypothetical combination of Ton in view of Perkins I, "IP Mobility Support," in further view of Troxel and requests withdrawal of the rejection.

3. Motivation for the hypothetical combinations of the cited references improperly stems from Applicant's claimed invention

Applicant respectfully submits that the Final Office Action uses Applicant's claimed elements as the suggestion and/or motivation for the hypothetical combination of Ton, Perkins I, and Troxel, and also with respect to the additional references cited in response to the limitations of Applicant's dependent claims.

The Federal Circuit has noted that "an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely *by finding prior art corollaries* for the claimed elements would permit an examiner to use the *claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention.* Such an approach would be 'an illogical and inappropriate process by which to determine patentability.'" *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998) (quoting *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570 (Fed. Cir. 1996)) (emphasis added).

To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. *Id.*

That is, Applicant respectfully submits that there is no suggestion or motivation to modify the post-registration redundancy device of Ton in view of the protocol enhancements of

Perkins, "IP Mobility Support," to achieve Applicant's invention of its Independent Claims 1 and 15, and further in view of the foreign agent ranking device of Troxel with regard to Independent Claim 10, to achieve Applicant's claimed invention. Further, it is respectfully submitted that in several instances, much less teach or suggest all of Applicant's claim limitations. Applicant respectfully submits that its disclosure was improperly used as a blue print to bring disassociated references to form an improper basis for rejection of Applicant's claimed invention.

Rejections to Applicant's dependent claims had been based upon further citation of Jue, Tiedmann, Fehnel, and/or Perkins II to the base rejection under Ton in view of Perkins I to Independent Claims 1 and 15, and further in view of Troxel to the rejection of Independent Claim 10.

Jue relates to "[m]obility supporting IP networks [that] requires servers *to forward packets* to mobile hosts and to maintain information pertaining to a mobile host's location in the network." (Jue, Abstract). That is, post-registration activities.

Tiedmann relates to a cellular telephone "system for increasing the reliability of the cellular telephone system in environments having substantial multipath propagation or under conditions wherein a large number of mobile telephone units simultaneously attempt to access a base station." (Tiedmann 1:18-24). Specifically, Tiedmann relates to "[reducing] interference between multiple spread-spectrum transmitters operating simultaneously . . . ." (Tiedmann 3:12-15). Tiedmann appears disassociated from the aspects of Applicant's invention.

Perkins II recites that "Mobile IP requires the existence of a network node known as the home agent. Whenever the mobile node is not attached to its home network (and is therefore attached to what is termed a foreign network), the home agent gets all the packets destined for

the mobile node and arranges to deliver them to the mobile node's current point of attachment." (Perkins, "Mobile Networking through Mobile IP," at p. 59). That is, Perkins does not address home agent inoperability.

Fehnel recites "an object . . . to provide methods and systems for generating a current time of day in a cellular radiotelephone. (Fehnel 2:20-22).

Claims 4-6 depend directly or indirectly from Independent Claim 1. Claims 12-14 depend directly or indirectly from Independent Claim 10. Claims 18-10 depend directly or indirectly from Independent Claim 15. In that Ton in view of Perkins, "IP Mobility Support," does not provide a prima facie case of obviousness with respect to Independent Claims 1 and 15, the addition of supplemental references, as respectfully submitted, do not cure the deficiency of the lack of a prima facie case of obviousness as to the claims that depend from these independent claims. Accordingly, Applicant respectfully requests that the rejection to these claims be withdrawn.

Claim 12-14 depends directly or indirectly from Independent Claim 10. In that Ton, in view of Perkins, "IP Mobility Support," in further view of Troxel does not provide a prima facie case of obviousness with respect to Independent Claims 10, the addition of supplemental references, as respectfully submitted, do not cure the deficiency of the lack of prima facie case of obviousness as to the claims that dependent from Independent Claim 10. Accordingly, Applicant respectfully requests that the rejection to these claims be withdrawn.

Accordingly, Applicant respectfully submits that there is no suggestion or motivation in the post-registration redundancy device of Ton in view of the protocol enhancements of Perkins, "IP Mobility Support, or the various references further cited, to achieve Applicant's claimed

invention of dependent Claims 4-6, which depend directly or indirectly from Independent Claim 1, dependent Claims 12-14, which depend directly or indirectly from Claim 10, and dependent Claims 18-20, which depend directly or indirectly from Independent Claim 15.

G. Conclusions

For the above-provided reasons, the Appellant respectfully requests that all of the rejections of the Final Office Action be overturned and that the claims in the present application be allowed to issue.

Respectfully submitted,

Date: December 1, 2006

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H. Claims Appendix

1. (Previously presented) A method for registering a subscriber unit with a home agent in a cellular system, the method comprising:

storing addresses for a plurality of home agents in the subscriber unit, wherein the plurality of home agents includes a primary home agent and a plurality of secondary home agents;

attempting registration with the primary home agent;

failing to achieve registration with the primary home agent;

the subscriber unit selecting a secondary home agent from the plurality of secondary home agents in an attempt to balance load among the plurality of secondary home agents; and

attempting registration with the secondary home agent.

2. (Previously Presented) The method of claim 1, further comprises:

the subscriber unit rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent.

3. (Original) The method of claim 2, further comprising:

attempting registration with the first secondary home agent;

failing to achieve registration with the first secondary home agent; and

attempting registration with the second secondary home agent.

4. (Previously Presented) The method of claim 2, wherein the subscriber unit rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent comprises:

the subscriber unit generating a random number; and

the subscriber unit using the random number to rank order the plurality of secondary home agents.

5. (Previously Presented) The method of claim 2, wherein the subscriber unit rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent comprises:

the subscriber unit determining a current date; and

the subscriber unit using the current date to rank order the plurality of secondary home agents.

6. (Previously Presented) The method of claim 2, wherein the subscriber unit rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent comprises:

the subscriber unit determining a current time; and

the subscriber unit using the current time to rank order the plurality of secondary home agents.

7. (Original) The method of claim 1, wherein the plurality of addresses for the home agents stored in the subscriber unit is programmed by a service provider prior to delivering the subscriber unit to its subscriber.

8. (Original) The method of claim 1, wherein the plurality of addresses for the home agents stored in the subscriber unit is programmed by the service provider using over the air access.

9. (Original) The method of claim 1, wherein at least some of the plurality of addresses for the home agents stored in the subscriber unit is reprogrammed by the service provider using over the air access.

10. (Previously Presented) A method for registering a subscriber unit with a home agent in a cellular system, the method comprising:

storing addresses for a plurality of home agents in the subscriber unit, wherein the plurality of home agents includes a primary home agent and a plurality of secondary home agents;

attempting registration with the primary home agent;

failing to achieve registration with the primary home agent;

the subscriber unit rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent in an attempt to balance load among the plurality of secondary home agents; and

attempting registration with the first secondary home agent.

11. (Original) The method of claim 10, further comprising:

failing to achieve registration with the first secondary home agent; and

attempting registration with the second secondary home agent

12. (Previously Presented) The method of claim 10, wherein the subscriber unit rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent comprises:

the subscriber unit generating a random number; and

the subscriber unit using the random number to rank order the plurality of secondary home agents.

13. (Previously Presented) The method of claim 10, wherein the subscriber unit rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent comprises:

the subscriber unit determining a current date; and

the subscriber unit using the current date to rank order the plurality of secondary home agents.

14. (Previously Presented) The method of claim 10, wherein the subscriber unit rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent comprises:

the subscriber unit determining a current time; and

the subscriber unit using the current time to rank order the plurality of secondary home agents.

15. (Previously presented) A subscriber unit that operates within a cellular system, the subscriber unit comprising:

an antenna;

a radio frequency unit coupled to the antenna; and

at least one digital processor coupled to the radio frequency unit that executes software instructions causing the subscriber unit to:

store addresses for a plurality of home agents in the subscriber unit, wherein the plurality of home agents includes a primary home agent and a plurality of secondary home agents;

attempt registration with the primary home agent;

failing to achieve registration with the primary home agent;

select a secondary home agent from the plurality of secondary home agents in an attempt to balance load among the plurality of secondary home agents; and

attempt registration with the secondary home agent.

16. (Previously Presented) The subscriber unit of claim 15, wherein execution of the software instructions further causes the subscriber unit to:

rank order the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent.

17. (Original) The subscriber unit of claim 16, wherein execution of the software instructions further causes the subscriber unit to:

attempt registration with the first secondary home agent;

fail to achieve registration with the first secondary home agent; and

attempt registration with the second secondary home agent.

18. (Original) The subscriber unit of claim 17, wherein in rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent, execution of the software instructions further causes the subscriber unit to:

generate a random number; and

use the random number to rank order the plurality of secondary home agents.

19. (Original) The subscriber unit of claim 17, wherein in rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent, execution of the software instructions further causes the subscriber unit to:

determine a current date; and

use the current date to rank order the plurality of secondary home agents.

20. (Original) The subscriber unit of claim 17, wherein in rank ordering the plurality of secondary home agents into at least a first secondary home agent and a second secondary home agent, execution of the software instructions further causes the subscriber unit to:

determine a current time; and

use the current time to rank order the plurality of secondary home agents.

21. (Original) The subscriber unit of claim 15, wherein the plurality of addresses for the home agents stored in the subscriber unit is programmed by a service provider prior to delivering the subscriber unit to its subscriber.

22. (Original) The subscriber unit of claim 15, wherein the plurality of addresses for the home agents stored in the subscriber unit is programmed by the service provider using over the air access.

23. (Original) The subscriber unit of claim 15, wherein at least some of the plurality of addresses for the home agents stored in the subscriber unit is reprogrammed by the service provider using over the air access.

I. Evidence Appendix

No Evidence Submitted.

J. Related Proceedings Appendix

No Related Proceedings